

1           26. The apparatus of claim 25, further including an  
2 auxiliary power source capable of providing a control power  
3 signal at a preselected control signal voltage, regardless of the  
4 magnitude of the ac input signal.

1           27. The apparatus of claim 26, wherein the auxiliary  
2 power source includes an auxiliary transformer with a plurality  
3 of primary taps.

1           28. The apparatus of claim 25, wherein the converter  
2 includes a boost circuit.

1           29. The apparatus of claim 25, wherein the output  
2 circuit includes a pulse width modulator.

1           30. The apparatus of claim 29, wherein the converter  
2 includes a boost circuit.

1           31. The apparatus of claim 25, wherein the output  
2 circuit includes an inverter.

1           32. The apparatus of claim 25 wherein the output  
2 circuit includes a rectifier.

1           33. The apparatus of claim 25 wherein the output  
2 circuit includes a cycloconverter.

1           34. A method of providing a welding, cutting or  
2 heating current, comprising:  
3           converting and power factor correcting an ac input  
4 signal to a second ac signal; and  
5           changing the second ac signal into a third signal  
6 having a current suitable for welding, cutting or heating.

1 35. The method of claim 34, wherein converting the ac  
2 input signal includes boost converting the ac signal.

1 36. The method of claim 34 further including providing  
2 control signals to the converter.

1 37. The method of claim 34, further including  
2 providing auxiliary power signal by transforming the ac input  
3 signal.

1 38. The method of claim 34, wherein changing includes  
2 pulse width modulating.

1 39. The method of claim 34, wherein changing includes  
2 inverting.

1 40. A welding, cutting or heating power source,  
2 comprising:  
3 rectifier means for receiving an ac input providing a  
4 first dc signal;  
5 converter means for receiving the first dc signal and  
6 providing a converter output;  
7 control means for controlling the converter means,  
8 wherein the control means includes a power factor correction  
9 means for power factor correction, connected to the  
10 converter means;  
11 output means for receiving the converter output and  
12 providing a welding, heating or cutting signal.

13 41. The apparatus of claim 40, wherein the converter  
14 means includes a boost circuit.

1 42. The apparatus of claim 42, wherein the output  
2 means includes a pulse width modulator.

1           43. The apparatus of claim 40, wherein the output  
2 circuit includes an inverter.

1           44. The apparatus of claim 40 wherein the output  
2 circuit includes a rectifier.

1           45.       A weldment or metal cut formed by a process  
2 which comprises:  
3       converting and power factor correcting an ac input  
4 signal to a second ac signal; and  
5       changing the second ac signal into a third signal  
6 having a current suitable for welding or cutting.

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